

What I claim is:

Claim 1. A thin-film magnetic head having an MR head portion containing magnetoresistive elements, wherein the following layers are formed on at least the surface of said MR head portion facing a recording medium:

(A) a lower layer composed of a thin film having a composition represented by the formula selected from the group consisting of:

formula (i): $\text{SiC}_X \text{H}_Y \text{O}_Z \text{N}_W \text{F}_T \text{B}_U \text{P}_V$

where $X = 0.5 - 26$, $Y = 0.5 - 13$, $Z = 0 - 6$, $W = 0 - 6$, $T = 0 - 6$, $U = 0 - 1$ and $V = 0 - 1$, in terms of atomic ratio, and

formula (ii): $\text{SiH}_Y \text{O}_Z \text{N}_W \text{F}_T \text{B}_U \text{P}_V$

where $Y = 0.0001 - 0.7$, $Z = 0 - 6$, $W = 0 - 6$, $T = 0 - 6$, $U = 0 - 1$ and $V = 0 - 1$, in terms of atomic ratio; and

(B) an upper layer composed of a diamond-like thin film having a composition represented by the following formula: $\text{CH}_a \text{O}_b \text{N}_c \text{F}_d \text{B}_e \text{P}_f$

where $a = 0 - 0.7$, $b = 0 - 1$, $c = 0 - 1$, $d = 0 - 1$, $e = 0 - 1$ and $f = 0 - 1$, in terms of atomic ratio.

Claim 2. The magnetic head according to Claim 1, wherein the overall thickness of said lower layer and said upper layer is 40 Å or less.

Claim 3. The magnetic head according to Claim 1 or 2, wherein said lower layer and said upper layer are formed by vapor deposition method.

Claim 4. The magnetic head according to Claim 1 or 2, wherein said lower layer has a thickness of 20 Å or less, and said upper layer has a thickness of 20 Å or less.

Claim 5. A method for producing a thin-film magnetic head, wherein vapor deposition is conducted on at least the surface of said thin-film magnetic head facing a recording medium, in such a manner that the following layers are formed thereon:

(A) a lower layer having a composition represented by the formula selected from the group consisting of

formula (i): $\text{SiC}_X \text{H}_Y \text{O}_Z \text{N}_W \text{F}_T \text{B}_U \text{P}_V$

where $X = 0.5 - 26$, $Y = 0.5 - 13$, $Z = 0 - 6$, $W = 0 - 6$, $T = 0 - 6$, $U = 0 - 1$ and $V = 0 - 1$, in terms of atomic ratio, and

formula (ii): $\text{SiH}_Y \text{O}_Z \text{N}_W \text{F}_T \text{B}_U \text{P}_V$

where $Y = 0.0001 \cdot 0.7$, $Z = 0 \cdot 6$, $W = 0 \cdot 6$, $T = 0 \cdot 6$, $U = 0 \cdot 1$ and $V = 0 \cdot 1$, in terms of atomic ratio; and

(B) an upper layer composed of a diamond-like thin film having a composition represented by the following formula: $\text{CH}_a \text{O}_b \text{N}_c \text{F}_d \text{B}_e \text{P}_f$

where $a = 0 \cdot 0.7$, $b = 0 \cdot 1$, $c = 0 \cdot 1$, $d = 0 \cdot 1$, $e = 0 \cdot 1$ and $f = 0 \cdot 1$, in terms of atomic ratio.

Claim 6. The method according to Claim 5, wherein deposition is conducted in such a manner that the thickness of said lower layer becomes 20 Å or less, and the thickness of said upper layer becomes 20 Å or less.

Claim 7. The method according to Claim 5, wherein vapor deposition is conducted by applying a negative bias voltage to the thin-film magnetic head.

Claim 8. The method according to Claim 7, wherein said bias voltage is applied by self-bias generated by an applied DC source or an applied radiofrequency power.

Claim 9. A magnetic disk device having at least one slider equipped with the thin-film magnetic head according to Claim 1.